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TECH CENTER 1600/2900

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<120> PLANT CELL CYCLIN GENES

<130> BB1149 US NA

<150> 60/078,735

<151> 1998 March 20

<150> PCT/US99/06047

<151> 1999 March 19

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<212> DNA

<213> Zea mays

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<213> Zea mays

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Ile Glu Ala Val Gln Ala Asp Val Thr Ala His Met Arg Ser Ile Leu
50 55 60

Val Asp Trp Leu Val Glu Val Ala Glu Glu Tyr Lys Leu Val Ala Asp
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Gly	Glu	Leu	Pro	Asn	Leu	Gln	Asn	Leu	Ile	Val	Ser	Glu	Thr	Gln	Asn
		35					40					45			
Xaa	Arg	Lys	Glu	Lys	Xaa	Leu	Cys	Xaa	Lys	Asn	Pro	Asn	Glu	Lys	Lys
	50					55					60				
Pro	Ser	Pro	Thr	Asn	Asn	Asn	Thr	Phe	Pro	Ser	Pro	Gln	Ile	Xaa	Glu
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Ser	Tyr	Asp	Ser	Asp	Ile	His	Gly	Tyr	Leu	Arg	Glu	Met	Glu	Met	Gln
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Gly Leu Asn Val Ile Asp Ile Asp Lys Asp Asn Gly Asn Pro Gln Met
35 40 45
Cys Ala Ser Tyr Ala Ala Glu Ile Tyr Arg Asn Leu Met Ala Ala Glu
50 55 60
Leu Ile Arg Arg Pro Lys Ser Asn Tyr Met Glu Thr Leu Gln Arg Asp
65 70 75 80
Ile Thr Lys Gly Met Arg Gly Ile Leu Ile Asp Trp Ala Leu Arg Phe
85 90 95

Leu Glu Glu Tyr Lys Leu Leu Pro Asp Thr Leu Tyr Leu Thr Val Tyr
 100 105 110
 Leu Ile Asp Gln Phe Leu Ser Arg Lys Tyr Ile Glu Arg Gln Lys Leu
 115 120 125
 Gln Leu Leu Gly Ile Thr Ser Met Leu Ile Ala Ser Lys Tyr Glu Glu
 130 135 140
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 Tyr Thr Lys Asn Gln Val Leu Lys Met Glu Cys Glu Val Leu Asn Asp
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 Leu Gly Phe His Leu Ser Val Pro Thr Ile Lys Thr Phe Leu Arg Arg
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 Gly Tyr Leu
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35 40 45

Val Val Asp Gln Asp Glu Glu Tyr Val Ala Leu Leu Leu Ser Lys Glu
50 55 60

Ser Ala Ser Gly Gly Gly Gly Pro Val Glu Glu Met Glu Asp Trp Met
65 70 75 80

~~Lys Ala Ala Arg Ser Gly Cys Val Arg Trp Ile Ile Lys Thr Thr Ala~~
~~85 90 95~~

Met Phe Arg Phe Gly Gly Lys Thr Ala Tyr Val Ala Val Asn Tyr Leu
100 105 110

Asp Arg Phe Leu Ala Gln Arg Arg Val Asn Arg Glu His Ala Trp Gly
115 120 125

Leu Gln Leu Leu Met Val Ala Cys Met Ser Leu Ala Thr Lys Leu Glu
130 135 140

Glu His His Ala Pro Arg Leu Ser Glu Phe Pro Leu Asp Ala Cys Glu
145 150 155 160

Phe Ala Phe Asp Ser Ala Ser Ile Leu Arg Met Glu Leu Leu Val Leu
165 170 175

Gly Thr Leu Glu Trp Arg Met Ile Ala Val Thr Pro Phe Pro Tyr Ile
180 185 190

Ser Tyr Phe Ala Ala Arg Phe Arg Glu Thr Ser Ala Gly Arg Ile Leu
195 200 205

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 <213> Oryza sativa

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 35 40 45

Leu Gln Leu Leu Ser Val Ala Cys Leu Ser Leu Ala Ala Lys Val Glu
 50 55 60

Glu Arg Arg Pro Pro Arg Leu Pro Glu Phe Lys Leu Asp Met Tyr Asp
 65 70 75 80

Cys Ala Ser Leu Met Arg Met Glu Leu Leu Val Leu Thr Thr Leu Lys
 85 90 95

Trp Gln Met Ile Thr Glu Thr Pro Phe Ser Tyr Leu Asn Cys Phe Thr
 100 105 110

Ala Lys Phe Arg His Asp Glu Arg Lys Ala Ile Val Leu Arg Ala Ile
 115 120 125

Glu Cys Ile Phe Ala Ser Ile Lys Val Ile Ser Ser Val Gly Tyr Gln
 130 135 140

Pro Ser Thr Ile Ala Leu Ala Ala Ile Leu Ile Ala Arg Asn Lys Glu
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Gln Leu Met Met Leu
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 35 40 45
 Ser Ile Ala Ser Phe Ile Glu His Glu Arg Asn Phe Val Pro Gly Phe
 50 55 60
 Glu Tyr Leu Ser Arg Phe Gln Ser Arg Ser Leu Asp Ala Asn Ala Arg
 65 70 75 80
 Glu Glu Ser Val Gly Trp Ile Leu Lys Val His Ala Tyr Tyr Gly Phe
 85 90 95
 Gln Pro Leu Thr Ala Tyr Leu Ala Val Asn Tyr Met Asp Arg Phe Leu
 100 105 110
 Asp Ser Arg Arg Leu Pro Glu Thr Asn Gly Trp Pro Leu Gln Leu Val
 115 120 125
 Ser Val Ala Cys Leu Ser Leu Ala Ala Lys Met Glu Glu Pro Leu Val
 130 135 140

Pro Ser Leu Leu Asp Leu Gln Ile Glu Gly Ala Lys Tyr Ile Phe Glu
145 150 155 160

Pro Arg Thr Ile Arg Arg Met Glu Leu Leu Val Leu Gly Val Leu Asp
165 170 175

Trp Arg Leu Arg Ser Val Thr Pro Leu Cys Phe Leu Ala Phe Phe Ala
180 185 190

Cys Lys Val Asp Ser Thr Gly Thr Phe Ile Arg Phe Leu Ile Ser Arg
195 200 205

Ala Thr Glu Ile Ile Val Ser Asn Ile Gln Glu Ala Ser Phe Leu Ala
210 215 220

Tyr Trp Pro Ser Cys Ile Ala Ala Ala Ala Ile Leu Thr Ala Ala Asn
225 230 235 240

Glu Ile Pro Asn Trp Ser Val Val Lys Pro Glu Asn Ala Glu Ser Trp
245 250 255

Cys Glu Gly Leu Arg Lys Glu Lys Val Ile Gly Cys Tyr Gln Leu Met
260 265 270

Gln Glu Leu Val Ile Asn Asn Asn Gln Arg Lys Leu Pro Leu Leu Lys
275 280 285

Val Leu Pro Gln Leu Arg Val Thr Thr Arg Thr Arg Met Arg Ser Ser
290 295 300

Thr Val Ser Ser Phe Ser Ser Ser Ser Thr Ser Phe Ser Leu Ser
305 310 315 320

Cys Lys Arg Arg Lys Leu Asn Asn Arg Leu Trp Val Asp Asp Lys Gly
325 330 335

Asn Ser Glu

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<400> 13

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<212> PRT
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<400> 14

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Asp Glu Arg Asn Phe Val Pro Gly Phe Glu Tyr Leu Asn Arg Phe Gln
35 40 45

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Ser Arg Ser Leu Asp Ala Ser Ala Arg Glu Glu Ser Val Ala Trp Ile
50 55 60

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Leu Lys Val Gln Ala Tyr Tyr Ala Phe Gln Pro Val Thr Ala Tyr Leu
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Ser Val Asn Tyr Leu Asp Arg Phe Leu Asn Ser Arg Pro Leu Pro Pro
85 90 95

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Lys Thr Asn Gly Trp Pro Leu Gln Leu Leu Ser Val Ala Cys Leu Ser
100 105 110

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Leu Ala Ala Lys Met Glu Glu Ser Leu Val Pro Ser Leu Leu Asp Leu
115 120 125

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Gln Val Glu Gly Ala Lys Tyr Val Phe Glu Pro Lys Thr Ile Arg Arg
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Met Glu Leu Leu Val Leu Gly Val Leu Asp Trp Arg Leu Arg Ser Val
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Thr Pro Phe Ser Phe Leu Asp Phe Phe Ala Cys Lys Leu Asp Ser Thr
165 170 175

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Gly Thr Phe Thr Gly Phe Leu Ile Ser Arg Ala Thr Gln Ile Ile Leu
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Ser Asn Ile Gln Glu Ala Ser Phe Leu Ala Tyr Trp Pro Ser Cys Ile
195 200 205

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210 215 220

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Glu Lys Ile Ile Gly Cys Tyr Gln Leu Met Gln Glu Leu Val Ile Asp
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Asn Asn Gln Arg Lys Pro Pro Lys Val Leu Pro Gln Leu Arg Val Thr
260 265 270

Ile Ser Arg Pro Ile Met Arg Ser Ser Val Ser Ser Phe Leu Ala Ser
275 280 285

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<210> 15
<211> 570
<212> DNA
<213> Triticum aestivum

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<210> 16
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<212> PRT
<213> Triticum aestivum

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Ser Asp Asn Thr Tyr Thr Arg Glu Gln Ile Leu Arg Met Glu Lys Ala
35 40 45

Ile Leu Asn Met Leu Glu Trp Asn Leu Thr Val Pro Thr Pro Tyr Val
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Phe Leu Val Xaa Phe Ala Lys Ala Ala Ser Ser
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<210> 17
<211> 1932
<212> DNA
<213> Zea mays

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<210> 18
<211> 388
<212> PRT
<213> Zea mays

<400> 18
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Phe	Gly	Ala	Asp	Leu	Phe	Pro	Pro	Gln	Ser	Glu	Glu	Cys	Val	Ala	Gly
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65					70					75					80
Arg	Leu	Arg	Gly	Gly	Gly	Gly	Cys	Leu	Cys	Val	Arg	Arg	Glu	Ala	Val
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Asp	Trp	Ile	Trp	Lys	Ala	Tyr	Thr	His	His	Arg	Phe	Arg	Pro	Leu	Thr
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Ala	Tyr	Leu	Ala	Val	Asn	Tyr	Leu	Asp	Arg	Phe	Leu	Ser	Leu	Ser	Glu
		115					120					125			
Val	Pro	Asp	Cys	Lys	Asp	Trp	Met	Thr	Gln	Leu	Leu	Ala	Val	Ala	Cys
	130					135					140				
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145					150					155					160
Asp	Leu	Gln	Glu	Val	Gly	Asp	Ala	Arg	Tyr	Val	Phe	Glu	Ala	Lys	Thr
				165					170					175	
Val	Gln	Arg	Met	Glu	Leu	Leu	Val	Leu	Thr	Thr	Leu	Asn	Trp	Arg	Met
			180					185					190		
His	Ala	Val	Thr	Pro	Phe	Ser	Tyr	Val	Asp	Tyr	Phe	Leu	Asn	Lys	Leu
		195					200					205			
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	210					215					220				
Ala	Glu	Leu	Ile	Leu	Arg	Ala	Ala	Arg	Gly	Thr	Gly	Cys	Val	Gly	Phe
225					230					235					240
Arg	Pro	Ser	Glu	Ile	Ala	Ala	Ala	Val	Ala	Ala	Ala	Val	Ala	Gly	Asp
				245					250					255	
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			260					265					270		
Lys	Glu	Arg	Val	Leu	Arg	Cys	Gln	Glu	Ala	Ile	Gly	Ser	Met	Ala	Ser
		275					280					285			
Ser	Ala	Ala	Ile	Asp	Asp	Ala	Thr	Val	Pro	Pro	Lys	Ser	Ala	Arg	Arg
	290					295					300				
Arg	Ser	Ser	Pro	Val	Pro	Val	Pro	Gln	Ser	Pro	Val	Gly	Val	Leu	Asp
305					310					315					320
Ala	Ala	Pro	Cys	Leu	Ser	Tyr	Arg	Ser	Glu	Glu	Ala	Ala	Thr	Ala	Thr
				325					330					335	
Ala	Thr	Ala	Thr	Ser	Ala	Ala	Ser	His	Gly	Ala	Pro	Gly	Ser	Ser	Ser
			340					345					350		
Ser	Ser	Ser	Thr	Ser	Pro	Val	Thr	Ser	Lys	Arg	Arg	Lys	Leu	Ala	Ser
		355					360					365			
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<211> 481
<212> DNA
<213> Oryza sativa

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<210> 20
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<213> Oryza sativa

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Arg Ala Ala Ala Ile Ser Ala Xaa Asp Ile Gln Arg Gly Glu Glu Phe
35 40 45
Met Phe Asp Glu Ala Lys Ile Gln Arg Met Glu Gln Met Val Leu Asn
50 55 60
Ala Leu Glu Trp Arg Thr Arg Ser Val Thr Pro Leu Ala Phe Leu Gly
65 70 75 80
Phe Phe Leu Ser Ala Trp Phe Pro Gln Ala Ala Ala Pro Gly Ala Ala
85 90 95

Arg Cys His Xaa Gly Arg Ala Val Glu Leu Leu Leu Arg Val
100 105 110

<210> 21
<211> 789
<212> DNA
<213> Triticum aestivum

<400> 21
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<210> 22
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<213> Triticum aestivum

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Pro Ser Ser Asp Leu Thr Ala Ser Thr Lys Met Xaa Phe Glu Ala Asn
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Ser Ala Phe Glu Ala Arg Thr Ile Lys Val Met Glu Leu Leu Val Phe
35 40 45
Ser Thr Leu Lys Trp Arg Met Gln Ala Val Thr Ala Cys Ser Phe Ile
50 55 60
Asp Tyr Phe Leu Cys Lys Phe Asn Asp His Asp Thr Pro Ser Met Leu
65 70 75 80
Ala Phe Ser Cys Ser Thr Asp Leu Ile Leu Ser Thr Thr Lys Xaa Ala
85 90 95
Asp Phe Leu Val Phe Arg His Ser Glu Ile Ala Gly Ser Val Ala Leu
100 105 110
Pro Ser Phe Gly Glu His Lys Thr Ser Val Val Glu Met Ala Thr Thr
115 120 125

Asn Cys Lys Tyr Ile Asn Lys Gly Val Xaa Cys Asp Arg Lys Asp Pro
 130 135 140

Asp Glu Val Leu Pro Leu Trp Asn Ala Tyr Leu Lys Phe Gly Leu Arg
 145 150 155 160

Asp Met Leu

<210> 23
 <211> 603
 <212> DNA
 <213> Zea mays

<220>
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<210> 24
 <211> 318
 <212> PRT
 <213> Zea mays

<400> 24
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 Arg Cys Phe Leu Pro Gly Gly Ala Leu Arg Leu Gly Asp Gln Pro Trp
 35 40 45
 Met Ala Arg Leu Ala Ala Val Thr Cys Phe Ala Leu Ala Ala Lys Val
 50 55 60

Glu Glu Thr Arg Val Pro Pro Leu Leu Asp Leu Gln Leu Tyr Ala Ala
 65 70 75 80
 Ala Asp Ala Ala Asp Pro Tyr Val Phe Glu Ala Lys Thr Val Arg Arg
 85 90 95
 Met Glu Leu Leu Val Leu Ser Ala Leu Gly Trp Arg Met His Pro Val
 100 105 110
 Thr Pro Phe Ser Tyr Leu Gln Pro Val Leu Ala Asp Ala Ala Thr Arg
 115 120 125
 Leu Arg Ser Cys Glu Gly Val Leu Leu Ala Val Met Ala Asp Trp Arg
 130 135 140
 Trp Pro Arg His Arg Pro Ser Ala Trp Ala Ala Ala Ala Leu Leu Ile
 145 150 155 160
 Thr Ala Ala Ala Gly Asp Gly Gly Asp Gly Asp Gly Asp Thr Glu Leu
 165 170 175
 Leu Ala Leu Ile Asn Ala Pro Glu Asp Lys Thr Ala Glu Cys Ala Lys
 180 185 190
 Ile Ile Ser Glu Val Thr Gly Met Ser Phe Leu Ala Cys Asp Val Gly
 195 200 205
 Val Ser Ala Gly Asn Lys Arg Lys His Ala Ala Ala Gln Leu Tyr Ser
 210 215 220
 Pro Pro Pro Ser Pro Ser Gly Val Ile Gly Ala Leu Ser Cys Phe Ser
 225 230 235 240
 Cys Glu Ser Ser Thr Ser Ala Thr Ala Met Ala Ala Ala Val Gly Pro
 245 250 255
 Trp Ala Pro Ser Ala Ser Val Ser Val Ser Ser Ser Pro Glu Pro Pro
 260 265 270
 Gly Arg Ala Pro Lys Arg Ala Ala Ala Ala Ser Ala Ser Ala Ser Ala
 275 280 285

Ser Ala Gly Val Ala Pro Pro Val Gln Val Pro His Gln Leu Pro Pro
 290 295 300

Asp Glu Glu Ser Arg Asp Ala Trp Pro Ser Thr Cys Ala Ala
 305 310 315

<210> 25
 <211> 674
 <212> DNA
 <213> Glycine max

<220>
 <221> unsure
 <222> (527)

<220>
 <221> unsure
 <222> (561)

<220>
 <221> unsure
 <222> (640)

<220>
 <221> unsure
 <222> (643)

<400> 25
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 tccttctcca tcggggcatt ccgcactctc catcccataa aagtcccaga tccaagatgg 120
 cttaccacca tcaaaaatcc cttttggaca ccctatactg ctccgaagag cattggatag 180
 gggaagggtga atttgaccaa gcagaggagg agtacggtaa cagtaatagc aatagtagca 240
 gcaccttagt aaacaactcc cctgagtcct cccctcattt gttgctcgaa agcgacatgt 300
 tttgggacga acaagagttg gcategctgt tggagaaaga acaacacaac ccactaagca 360
 cttgctgtct ccaaagcaac cctgccttgg aggggtgctcg catagaagcc gtggagtggg 420
 ttctcaaagt aaacgcccac tactccttct ctgccctcac cgctgttctt gctgtcaact 480
 actttgaccg ttttctcttc agcttccgct ttcagaatga cattaancca tggatgactc 540
 ggggtcgctg ccgtcgcttg nctctccctc gctgccaaag tgggagagac acacgttccc 600
 tttcttattt gacccttcaa caaagtggga ggaggagtan atnctttgtt ccaagccaaa 660
 gacgattaaa aaag 674

<210> 26
 <211> 186
 <212> PRT
 <213> Glycine max

<220>
 <221> UNSURE
 <222> (137)

<220>
 <221> UNSURE
 <222> (149)

<220>
 <221> UNSURE
 <222> (175)..(176)

<400> 26
 Met Ala Tyr His His Gln Lys Ser Leu Leu Asp Thr Leu Tyr Cys Ser
 1 5 10 15

Glu Glu His Trp Ile Gly Glu Gly Glu Phe Asp Gln Ala Glu Glu Glu
 20 25 30

Tyr Gly Asn Ser Asn Ser Asn Ser Ser Ser Thr Leu Val Asn Asn Ser
 35 40 45
 Pro Glu Ser Ser Pro His Leu Leu Leu Glu Ser Asp Met Phe Trp Asp
 50 55 60
 Glu Gln Glu Leu Ala Ser Leu Leu Glu Lys Glu Gln His Asn Pro Leu
 65 70 75 80
 Ser Thr Cys Cys Leu Gln Ser Asn Pro Ala Leu Glu Gly Ala Arg Ile
 85 90 95
 Glu Ala Val Glu Trp Ile Leu Lys Val Asn Ala His Tyr Ser Phe Ser
 100 105 110
 Ala Leu Thr Ala Val Leu Ala Val Asn Tyr Phe Asp Arg Phe Leu Phe
 115 120 125
 Ser Phe Arg Phe Gln Asn Asp Ile Xaa Pro Trp Met Thr Arg Gly Arg
 130 135 140
 Cys Arg Arg Leu Xaa Leu Pro Arg Cys Gln Ser Gly Arg Asp Thr Arg
 145 150 155 160

Ser Leu Ser Tyr Leu Thr Leu Gln Gln Ser Gly Arg Arg Ser Xaa Xaa
 165 170 175
 Phe Val Pro Ser Gln Arg Arg Leu Lys Lys
 180 185

<210> 27
 <211> 554
 <212> DNA
 <213> Glycine max

<400> 27
 ctccctttca cctttcttca tagcctacca cttttctgct ttcattctact ctcacttctc 60
 ttcacacact gagacacaca gagagagaaa aataaagggt gtgatgggtg tcttactgag 120
 tgttttcttt ttataatgaa caaagaactg cacaccctct tcttcaccga agaagaagat 180
 ggcaattcag caccacaatg accaactaga gcataatgaa aatgtctcat ctgtccttga 240
 tgccctttac tgtgacgaag gaaagtggga agaggaagag gaggagaaag aagaagaaga 300
 agatgaaggt gaaaatgaaa gtgaagtgaac aacaaacact gcaacttgct ttttccctct 360
 gctcttggtg gagcaagact tgttctggga agatgaggaa cttaaactcta tcttttccaa 420
 agagaagggt caacatgaag aagcctatgg tataacaatc tgaacagtga tgtgtataac 480
 aacaacaaca atactagtat ataatgtgat ttggctcttg ctcttcagct cgtcggagcg 540
 tgatgatgct gaat 554

<210> 28
 <211> 94
 <212> PRT
 <213> Glycine max

<400> 28
 Met Ala Ile Gln His His Asn Asp Gln Leu Glu His Asn Glu Asn Val
 1 5 10 15
 Ser Ser Val Leu Asp Ala Leu Tyr Cys Asp Glu Gly Lys Trp Glu Glu
 20 25 30
 Glu Glu Glu Glu Lys Glu Glu Glu Glu Asp Glu Gly Glu Asn Glu Ser
 35 40 45
 Glu Val Thr Thr Asn Thr Ala Thr Cys Leu Phe Pro Leu Leu Leu Leu
 50 55 60

Glu Gln Asp Leu Phe Trp Glu Asp Glu Glu Leu Asn Ser Ile Phe Ser
65 70 75 80

Lys Glu Lys Val Gln His Glu Glu Ala Tyr Gly Ile Thr Ile
85 90

<210> 29
<211> 372
<212> PRT
<213> Catharanthus roseus

<400> 29

Met Ala Asp Lys Glu Asn Cys Ile Arg Val Thr Arg Leu Ala Lys Lys
1 5 10 15

Arg Ala Val Glu Ala Met Ala Ala Ser Glu Gln Gln Arg Pro Ser Lys
20 25 30

Lys Arg Val Val Leu Gly Glu Leu Lys Asn Leu Ser Ser Asn Ile Ser
35 40 45

Ser Ile Gln Thr Tyr Asp Phe Ser Ser Gly Pro Gln Lys Gln Gln Lys
50 55 60

Asn Lys Asn Lys Arg Lys Ala Lys Glu Ser Leu Gly Phe Glu Val Lys
65 70 75 80

Glu Lys Lys Val Glu Glu Ala Gly Ile Asp Val Phe Ser Gln Ser Asp
85 90 95

Asp Pro Gln Met Cys Gly Ala Tyr Val Ser Asp Ile Tyr Glu Tyr Leu
100 105 110

His Lys Met Glu Met Glu Thr Lys Arg Arg Pro Leu Pro Asp Tyr Leu
115 120 125

Asp Lys Val Gln Lys Asp Val Thr Ala Asn Met Arg Gly Val Leu Ile
130 135 140

Asp Trp Leu Val Glu Val Ala Glu Glu Tyr Lys Leu Leu Pro Asp Thr
145 150 155 160

Leu Tyr Leu Thr Val Ser Tyr Ile Asp Arg Phe Leu Ser Met Asn Ala
165 170 175

Leu Ser Arg Gln Lys Leu Gln Leu Leu Gly Val Ser Ser Met Leu Ile
180 185 190

Ala Ser Lys Tyr Glu Glu Ile Ser Pro Pro His Val Glu Asp Phe Cys
195 200 205

Tyr Ile Thr Asp Asn Thr Tyr Lys Lys Glu Glu Val Val Lys Met Glu
210 215 220

Ala Asp Val Leu Lys Phe Leu Lys Phe Glu Met Gly Asn Pro Thr Ile
225 230 235 240

Lys Thr Phe Leu Arg Arg Leu Thr Arg Val Val Gln Asp Gly Asp Lys
245 250 255

Asn Pro Asn Leu Gln Phe Glu Phe Leu Gly Tyr Tyr Leu Ala Glu Leu
260 265 270

Ser Leu Leu Asp Tyr Gly Cys Val Lys Phe Leu Pro Ser Leu Ile Ala
275 280 285

Ser Ser Val Ile Phe Leu Ser Arg Phe Thr Leu Gln Pro Lys Val His
 290 295 300
 Pro Trp Asn Ser Leu Leu Gln His Asn Ser Gly Tyr Lys Pro Ala Asp
 305 310 315 320
 Leu Lys Glu Cys Val Leu Ile Ile His Asp Leu Gln Leu Ser Lys Arg
 325 330 335
 Gly Ser Ser Leu Val Ala Val Arg Asp Lys Tyr Lys Gln His Lys Phe
 340 345 350
 Lys Cys Val Ser Thr Leu Thr Ala Pro Pro Ser Ile Pro Asp Glu Phe
 355 360 365
 Phe Glu Asp Ile
 370

<210> 30
 <211> 335
 <212> PRT
 <213> Arabidopsis thaliana

<400> 30
 Met Arg Ser Tyr Arg Phe Ser Asp Tyr Leu His Met Ser Val Ser Phe
 1 5 10 15
 Ser Asn Asp Met Asp Leu Phe Cys Gly Glu Asp Ser Gly Val Phe Ser
 20 25 30
 Gly Glu Ser Thr Val Asp Phe Ser Ser Ser Glu Val Asp Ser Trp Pro
 35 40 45
 Gly Asp Ser Ile Ala Cys Phe Ile Glu Asp Glu Arg His Phe Val Pro
 50 55 60
 Gly His Asp Tyr Leu Ser Arg Phe Gln Thr Arg Ser Leu Asp Ala Ser
 65 70 75 80
 Ala Arg Glu Asp Ser Val Ala Trp Ile Leu Lys Val Gln Ala Tyr Tyr
 85 90 95
 Asn Phe Gln Pro Leu Thr Ala Tyr Leu Ala Val Asn Tyr Met Asp Arg
 100 105 110
 Phe Leu Tyr Ala Arg Arg Leu Pro Glu Thr Ser Gly Trp Pro Met Gln
 115 120 125
 Leu Leu Ala Val Ala Cys Leu Ser Leu Ala Ala Lys Met Glu Glu Ile
 130 135 140
 Leu Val Pro Ser Leu Phe Asp Phe Gln Val Ala Gly Val Lys Tyr Leu
 145 150 155 160
 Phe Glu Ala Lys Thr Ile Lys Arg Met Glu Leu Leu Val Leu Ser Val
 165 170 175
 Leu Asp Trp Arg Leu Arg Ser Val Thr Pro Phe Asp Phe Ile Ser Phe
 180 185 190
 Phe Ala Tyr Lys Ile Asp Pro Ser Gly Thr Phe Leu Gly Phe Phe Ile
 195 200 205
 Ser His Ala Thr Glu Ile Ile Leu Ser Asn Ile Lys Glu Ala Ser Phe
 210 215 220

Leu Glu Tyr Trp Pro Ser Ser Ile Ala Ala Ala Ala Ile Leu Cys Val
 225 230 235 240
 Ala Asn Glu Leu Pro Ser Leu Ser Ser Val Val Asn Pro His Glu Ser
 245 250 255
 Pro Glu Thr Trp Cys Asp Gly Leu Ser Lys Glu Lys Ile Val Arg Cys
 260 265 270
 Tyr Arg Leu Met Lys Ala Met Ala Ile Glu Asn Asn Arg Leu Asn Thr
 275 280 285
 Pro Lys Val Ile Ala Lys Leu Arg Val Ser Val Arg Ala Ser Ser Thr
 290 295 300
 Leu Thr Arg Pro Ser Asp Glu Ser Ser Ser Pro Cys Lys Arg Arg Lys
 305 310 315 320
 Leu Ser Gly Tyr Ser Trp Val Gly Asp Glu Thr Ser Thr Ser Asn
 325 330 335

<210> 31

<211> 354

<212> PRT

<213> Nicotiana tabacum

<400> 31

Met Ala Ala Asp Asn Ile Tyr Asp Phe Val Ala Ser Asn Leu Leu Cys
 1 5 10 15
 Thr Glu Thr Lys Ser Leu Cys Phe Asp Asp Val Asp Ser Leu Thr Ile
 20 25 30
 Ser Gln Gln Asn Ile Glu Thr Lys Ser Lys Asp Leu Ser Phe Asn Asn
 35 40 45
 Gly Ile Arg Ser Glu Pro Leu Ile Asp Leu Pro Ser Leu Ser Glu Glu
 50 55 60
 Cys Leu Ser Phe Met Val Gln Arg Glu Met Glu Phe Leu Pro Lys Asp
 65 70 75 80
 Asp Tyr Val Glu Arg Leu Arg Ser Gly Asp Leu Asp Leu Ser Val Arg
 85 90 95
 Lys Glu Ala Leu Asp Trp Ile Leu Lys Ala His Met His Tyr Gly Phe
 100 105 110
 Gly Glu Leu Ser Phe Cys Leu Ser Ile Asn Tyr Leu Asp Arg Phe Leu
 115 120 125
 Ser Leu Tyr Glu Leu Pro Arg Ser Lys Thr Trp Thr Val Gln Leu Leu
 130 135 140
 Ala Val Ala Cys Leu Ser Leu Ala Ala Lys Met Glu Glu Ile Asn Val
 145 150 155 160
 Pro Leu Thr Val Asp Leu Gln Val Gly Asp Pro Lys Phe Val Phe Glu
 165 170 175
 Gly Lys Thr Ile Gln Arg Met Glu Leu Leu Val Leu Ser Thr Leu Lys
 180 185 190
 Trp Arg Met Gln Ala Tyr Thr Pro Tyr Thr Phe Ile Asp Tyr Phe Met
 195 200 205

Arg Lys Met Asn Gly Asp Gln Ile Pro Ser Arg Pro Leu Ile Ser Gly
 210 215 220
 Ser Met Gln Leu Ile Leu Ser Ile Ile Arg Ser Ile Asp Phe Leu Glu
 225 230 235 240
 Phe Arg Ser Ser Glu Ile Ala Ala Ser Val Ala Met Ser Val Ser Gly
 245 250 255
 Glu Ile Gln Ala Lys Asp Ile Asp Lys Ala Met Pro Cys Phe Phe Ile
 260 265 270
 His Leu Asp Lys Gly Arg Val Gln Lys Cys Val Glu Leu Ile Gln Asp
 275 280 285
 Leu Thr Thr Ala Thr Ile Thr Thr Ala Ala Ala Ala Ser Leu Val Pro
 290 295 300
 Gln Ser Pro Ile Gly Val Leu Glu Ala Ala Ala Cys Leu Ser Tyr Lys
 305 310 315 320
 Ser Gly Asp Glu Arg Thr Val Gly Ser Cys Thr Thr Ser Ser His Thr
 325 330 335
 Lys Arg Arg Lys Leu Asp Thr Ser Ser Leu Glu His Gly Thr Ser Glu
 340 345 350
 Lys Leu

<210> 32
 <211> 373
 <212> PRT
 <213> Nicotiana tabacum

<400> 32
 Met Ala Ile Glu His Asn Glu Gln Gln Glu Leu Ser Gln Ser Phe Leu
 1 5 10 15
 Leu Asp Ala Leu Tyr Cys Glu Glu Glu Glu Glu Lys Trp Gly Asp Leu
 20 25 30
 Val Asp Asp Glu Thr Ile Ile Thr Pro Leu Ser Ser Glu Val Thr Thr
 35 40 45
 Thr Thr Thr Thr Thr Thr Lys Pro Asn Ser Leu Leu Pro Leu Leu Leu
 50 55 60
 Leu Glu Gln Asp Leu Phe Trp Glu Asp Glu Glu Leu Leu Ser Leu Phe
 65 70 75 80
 Ser Lys Glu Lys Glu Thr His Cys Trp Phe Asn Ser Phe Gln Asp Asp
 85 90 95
 Ser Leu Leu Cys Ser Ala Arg Val Asp Ser Val Glu Trp Ile Leu Lys
 100 105 110
 Val Asn Gly Tyr Tyr Gly Phe Ser Ala Leu Thr Ala Val Leu Ala Ile
 115 120 125
 Asn Tyr Phe Asp Arg Phe Leu Thr Ser Leu His Tyr Gln Lys Asp Lys
 130 135 140
 Pro Trp Met Ile Gln Leu Ala Ala Val Thr Cys Leu Ser Leu Ala Ala
 145 150 155 160

Lys	Val	Glu	Glu	Thr	Gln	Val	Pro	Leu	Leu	Leu	Asp	Phe	Gln	Val	Glu	
				165					170					175		
Asp	Ala	Lys	Tyr	Val	Phe	Glu	Ala	Lys	Thr	Ile	Gln	Arg	Met	Glu	Leu	
			180					185					190			
Leu	Val	Leu	Ser	Ser	Leu	Lys	Trp	Arg	Met	Asn	Pro	Val	Thr	Pro	Leu	
		195					200					205				
Ser	Phe	Leu	Asp	His	Ile	Ile	Arg	Arg	Leu	Gly	Leu	Arg	Asn	Asn	Ile	
	210					215					220					
His	Trp	Glu	Phe	Leu	Arg	Arg	Cys	Glu	Asn	Leu	Leu	Leu	Ser	Ile	Met	
225					230					235					240	
Ala	Asp	Cys	Arg	Phe	Val	Arg	Tyr	Met	Pro	Ser	Val	Leu	Ala	Thr	Ala	
				245					250					255		
Ile	Met	Leu	His	Val	Ile	His	Gln	Val	Glu	Pro	Cys	Asn	Ser	Val	Asp	
			260					265					270			
Tyr	Gln	Asn	Gln	Leu	Leu	Gly	Val	Leu	Lys	Ile	Asn	Lys	Glu	Lys	Val	
		275					280					285				
Asn	Asn	Cys	Phe	Glu	Leu	Ile	Ser	Glu	Val	Cys	Ser	Lys	Pro	Ile	Ser	
	290					295					300					
His	Lys	Arg	Lys	Tyr	Glu	Asn	Pro	Ser	His	Ser	Pro	Ser	Gly	Val	Ile	
305					310					315					320	
Asp	Pro	Ile	Tyr	Ser	Ser	Glu	Ser	Ser	Asn	Asp	Ser	Trp	Asp	Leu	Glu	
				325					330					335		
Ser	Thr	Ser	Ser	Tyr	Phe	Pro	Val	Phe	Lys	Lys	Ser	Arg	Val	Gln	Glu	
			340					345					350			
Gln	Gln	Met	Lys	Leu	Ala	Ser	Ser	Ile	Ser	Arg	Val	Phe	Val	Glu	Ala	
		355					360					365				
Val	Gly	Ser	Pro	His												
	370															